SPARKLE POWER INT'L LTD.

SPA090AS19C

19V@4.74A
(meet CEC)
Adapter Power Supply

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Electrical Specification

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1. SCOPE

This specification describes a 90w power supplies intended for use in notebook applications that require ultra-slim type demands. The AC input operates over a wide range that allows worldwide operation with no manual selection required. The Power Supply unit is external to the notebook application system.

1.1 Cooling

Free air convection is sufficient to meet the Rating specifications

2. ELECTRICAL SPECIFICATIONS

2.1 Input

Parameter	Test Conditions	Min	Typ	Max	Units
Input Voltage Range	Wide Range.	90		264	Vac
Input Frequency Range		47		63	Hz
Efficiency	Vin = 115 / 230 VAC, and Full Load To CEC standards (level 5).	87			%
No Load Power Consumption	Vin = 115 / 230 VAC, 60 Hz.			0.3	Watts
Input Power Factor	Vin = 115 / 230 VAC, 60 Hz.	0.9			
Electric Strength	Hi-Pot			3000	VAC
Peak Inrush Current	Vin = 115 VAC / 230 VAC (25 ℃ Ambient, Cold and Hot Start).	Shall be less than the rating of adapter critical component (including rectifiers, fuse and current limiting device)			
Average Efficiency	(1) Warm Up The UUT shall be measured after operated at 100% of rated current output for at least 30 minutes. (2) Tested sequence Efficiency tests shall be conducted in sequence: ① 100% maximum load ② 75% maximum load ③ 50% maximum load ④ 25% maximum load	Average efficiency of 25%, 50%, 75% and 100% load shall be more than 87% tested at 115Vac and 230Vac.			

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2.2 Output

Parameter	Test Conditions	Min	Typ	Max	Units
Output Voltage Rating	+-5% Initial tolerance	18.05	19.0	19.95	VDC
Output Power Rating	At typical voltage; 5ºC to 40ºC		90		Watts
Average Output Current	At typical voltage; 5ºC to 40ºC	0		4.74	A
Output Voltage Line Regulation	under AC Input operating range			0.5	%
Output Voltage Load Regulation	No load to rated load			2.5	%
Ripple and Noise	47uF/35V cap and 0.1uF ceramic cap on output, 20MHz BW			250	mV Pk to Pk
Transient Load Response	40% to 80% load change			< 5	mS
Turn-On Delay	120 VAC,			2.5	sec

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Parameter	Test Conditions	Min	Typ	Max	Units
Over Voltage Protection	Output voltage limit range Latch off	20.9		24.7	VDC
Over Current Protection	Output current limit range 90Vac~264Vac			6.5	A
Over Temperature Protection	No damage				
Short Circuit Protection	Output current limit Auto-recovery			1	A
Overshoot	At power-up or power-down			5	%
Holdup Time	Rated Load, 120 VAC, 19V +/– 10%	10			mS
Rise Time	5%~95% of output voltage	2		20	mS

2.3 Short Circuit Protection

The power supply has protection at short circuits conditions.

2.3.1 Short Circuit Recovery

The power supply output automatically recovers when the short circuit condition is removed.

2.4 Over Circuit Protection

The power supply has protection at over circuits conditions.

2.4.1 Over Circuit Recovery

The OCP shall limit the output current to 6.5 amperes by monotonically shutting down all voltage rails in the event of an over current condition. Auto recovery is required. The power supply shall be able to survive an OCP condition for an indefinite period of time without damage.

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2.5 Output Voltage Protection Limit

When the output is outside the voltage output limit range, the power supply latches off and remains shutdown. The AC input must be cycled to restart. The power supply shall be able to survive an OVP condition for an indefinite period of time without damage.

2.6 Over temperature Protection

A temperature sensor and associated protection circuitry are installed inside the AC adapter to detect the case internal temperature and provide protection against damage to the AC adapter. If the power supply shuts down due to over temperature, the power supply latches off and remains shutdown. The AC input must be cycled to restart.

2.7 System Capacitive Load

The system load capacitance is **1600uF**. And shall be capable of start up with a 1600uF load.

3. ENVIRONMENTAL

3.1 Temperatures and Humidity

Parameter	Test Conditions	Min	Typ	Max	Units
Temperature	Operating Range:	0		+40	°C
	Storage Range:	–40		+60	°C
Cooling	Free Air Convection	N/A	N/A	N/A	
Humidity	Operating Range:	10		90	%
	Storage Range:	5		95	

3.2 Altitude

The Power Supply operates up to an altitude of 10,000 feet above sea level.

3.3 Impact

The Power Supply withstands a drop from a height of 36 inches onto a concrete floor across the operating ranges of temperature and humidity. The Power Supply remains functional and the case will not crack or break. The number of units per drop = 1.

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3.4 Shock and Vibration

Operation vibration shall be 0.5G`S peak, 10-60Hz, 3Axes, after test no abnormally to be noted. Non operation vibration with shipping container shall be 2G`S peak, 7-50Hz,4G`S peak 50-500Hz,after test no abnormally to be found.

3.5 Drop-Test

Test height 80cm/6faces, after drop test no function abnormally to be noted.

4. EMC

4.1 Electrostatic Discharge (ESD)

The Power Supply meets EN61000–4-2, Level 4 requirements.

4.2 Electrical Fast Transient Test (EFT)

The Power Supply meets IEC 61000–4-4/1995, Level 2 requirements.

4.3 Surge Immunity Requirement

The Power Supply meets IEC 61000–4-5, Level 3 requirements.

4.4 Dielectric Withstand Voltage (Hi-Pot)

Between AC input and secondary applied 3000Vac/ test time 1 minute.

4.5. ELECTROMAGNETIC COMPATIBILITY

The Power Supply meets EN55022/CISPR 22 (Class B),
FCC Part 15 (Class-B) with 6dB margin.

5. REGULATORY AGENCY APPROVALS

5.1 Certifications

Certification is to IEC60950.

5.2 Other Requirements

Complies with Energy Star 2.0 (Level Ⅴ)

5.3 Leakage Current:

The AC leakage current is less than 250uA when adapter is connected to 264Vac/60Hz.

5.4 Insulation Resistance

The insulation resistance shall be not less than 20 M Ohm after application of 500VDC for 1minute.

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6. RELIABILITY

6.1 Mean Time Between Failure (MTBF)

The MTBF is calculated to be not less than 100,000 hours with 90% confidence at 25 ºC.

6.2 Burn-In

The power supply is burned in at 40ºC ambient temperature under nominal input and full rated load.

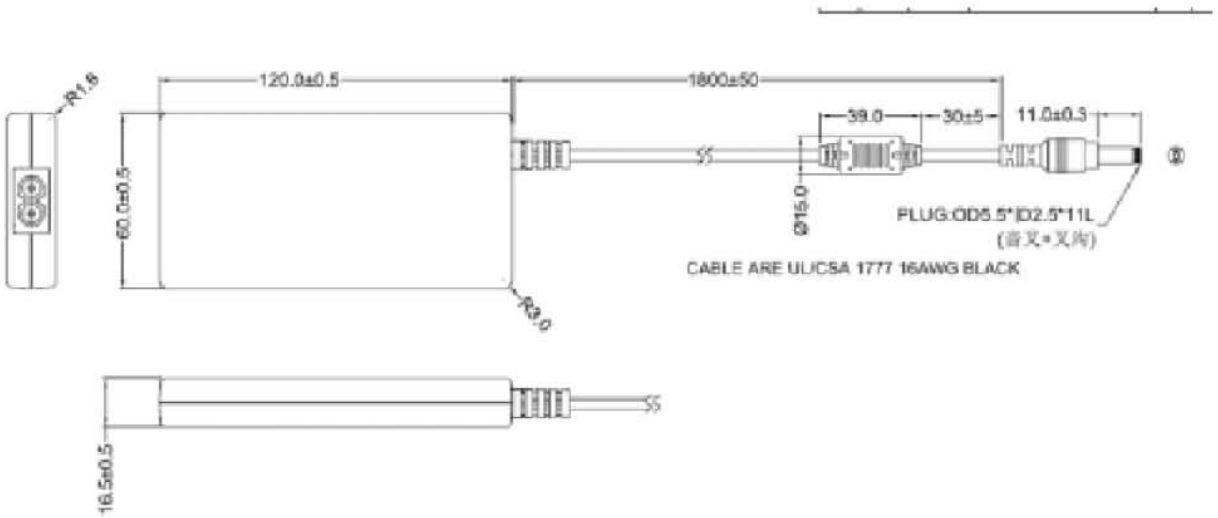
7. MECHANICAL

7.1 Mechanical Dimensions

L: 4.72' (120.0mm)
W: 2.36' (60.0mm)
H: 0.64'(16.5mm)

Outline Dimensions: inches (mm)

7.2 Mechanical Outline



7.3 RoHS & WEEE Directive Compliant

The Power Supply is compliant with the RoHS and WEEE directives.